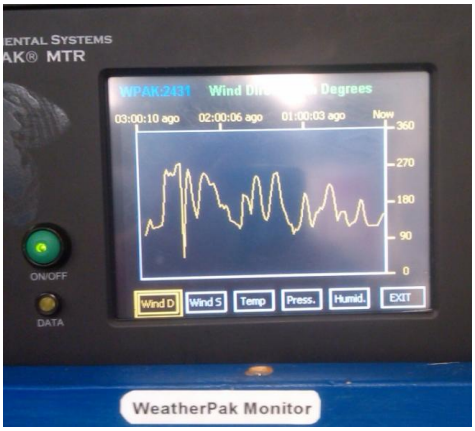
MassDEP Field Assessmen t and Support Team

Framingham – General Chemical Facility	July 30, 2012

Air Monitoring During Initial Facility Decontamination Operations



Background

On July 30, 2012, the MassDEP FAST Mobile Laboratory was deployed to the General Chemical facility on Leland Street in Framingham, to monitor air quality during the initiation of invasive decontamination operations. The laboratory arrived at the site at about 10:15 AM, and departed at the cessation of cleanup activities for the day, at about 6:30 PM.

A tiered air monitoring program was instituted to evaluate remedial air emissions:

- MassDEP personnel would periodically survey property locations with a hand-held photoionization detector (PID), to determine concentrations of Volatile Organic Compounds (VOCs).

- Four stationary *AreaRAE* monitors were positioned around the tank farm area, where work was being conducted, designated as DEP-1, DEP-2, DEP-3, and DEP-4 on Figure 2. DEP-1 was moved at about 1 PM, to an area on the edge of the tank farm, in order to obtain source-area "worst case" data. Each of these units was equipped with a 10.6 eV photoionization detector (PID), which continuously transmitted data every 2 seconds to a receiving unit located in the mobile laboratory. Each AreaRAE monitor was programmed to alarm if a value of 0.1 ppmV was exceeded (the lowest setting for these units).

- Over the course of the day, 8 air samples were obtained in 1 liter bags at different locations on the property, based upon cleaning activities, wind direction, PID readings, or odor conditions. Each of these samples was promptly analyzed on a HAPSITE Gas Chromatograph with a Mass Spectrometer (GC/MS) in the mobile laboratory.

Weather Conditions

It was a warm and partly sunny day, with temperatures above 80°F. While regional winds were from the south throughout the day, data from the 10-meter high weather station on the mobile laboratory recorded relatively low wind speeds (< 2 MPH) and fluctuating directions throughout the duration of cleaning activities. As can be seen in Figure 1, these fluctuations were between 90° and 270° on the directional azimuth, meaning that winds were constantly shifting between west/southwesterly and east/southeasterly, and thus blowing towards the north, northeast, and northwest. Moreover, given the presence of a variety of structures and canopies at the facility, localized and transient near-ground-surface eddies may have further influenced air flow and contaminant transport patterns.

Figure 1: On-Board Weather Monitor

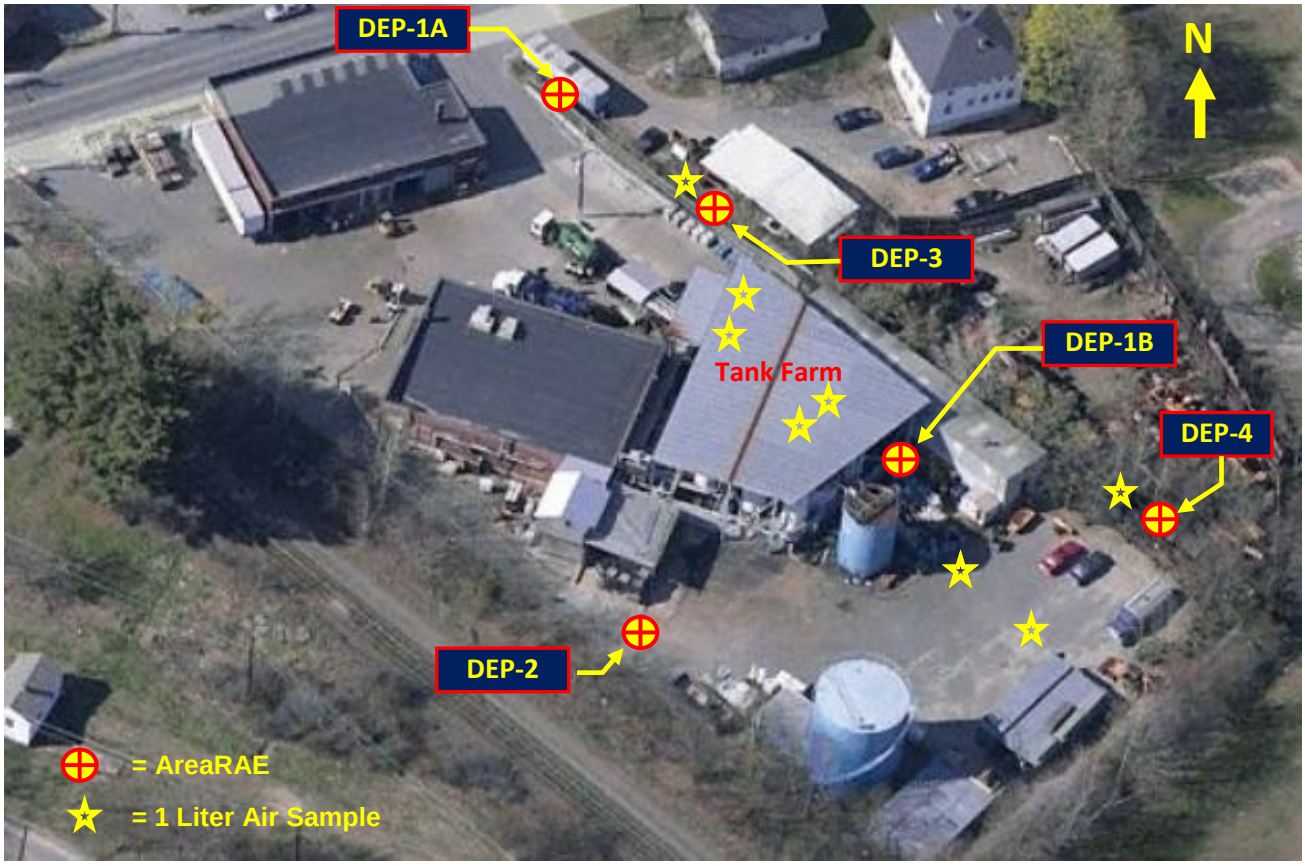


Figure 2 – Location of MassDEP AreaRAES and Air Samples

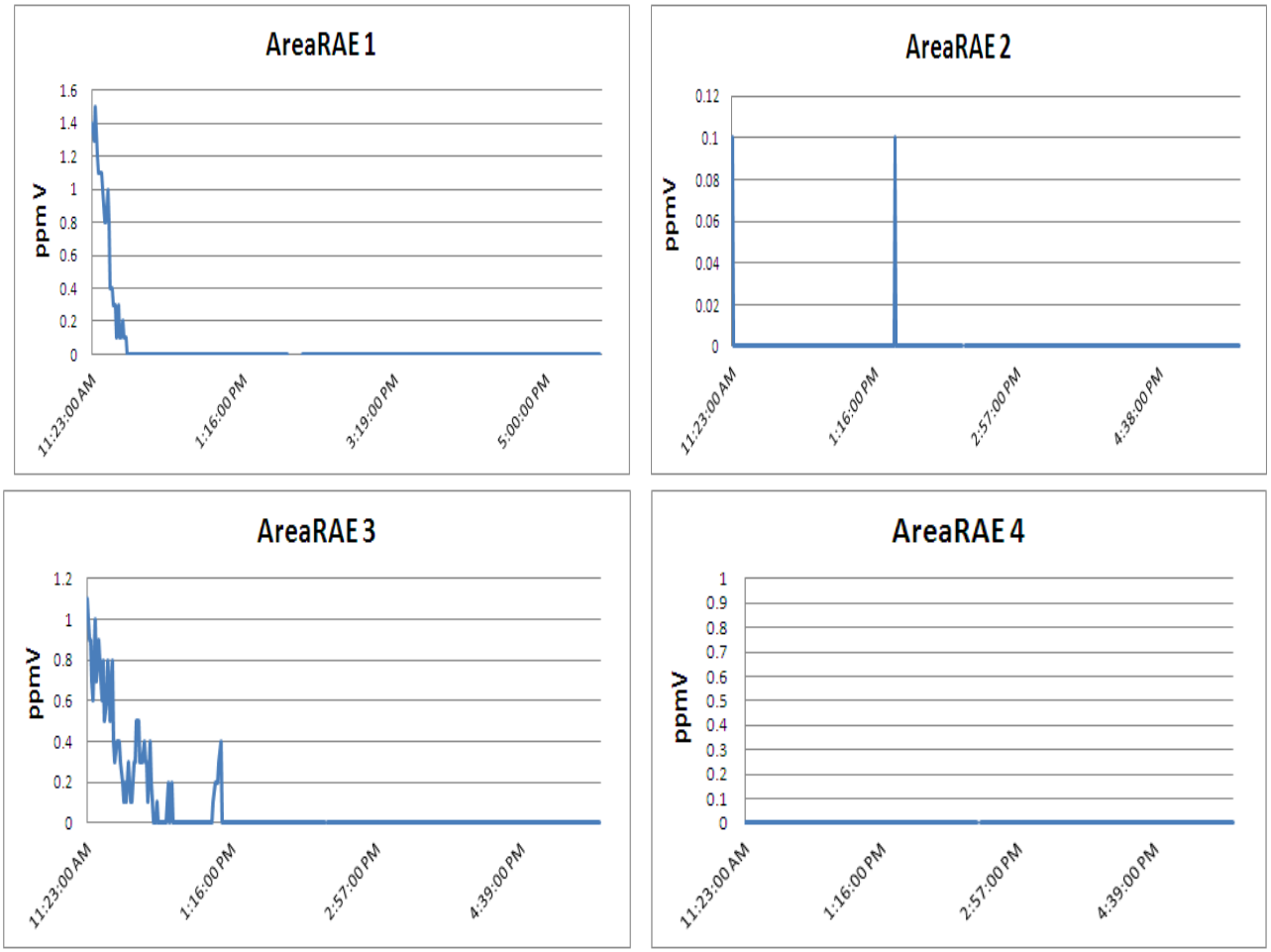
Because the shifting winds made it difficult to ascertain a downwind location, a decision was made in the early afternoon to focus on air quality directly in the work area, to understand "worst case" conditions, and therefore obtain a sense of contaminant chemistry and levels at the facility fence line. Accordingly, AreaRAE DEP-1A was moved directly into the tank farm area (designated at DEP-1B in Figure 2), where work was being done.

Results

Volatile Organic Compound (VOC) data from the PID sensor on the four AreaRAE units is presented in Figure 3. GC/MS data from the 8 discrete air samples are presented in Table 1.

Discussion

As can be seen in Figure 3, there were positive PID responses on AreaRAEs DEP-1 and DEP-3 after their initial placement in the northerly portion of the site. It is not clear what caused these initial readings, though there were trucks and equipment running in this area, including a Vac truck that was being used to withdraw air from tanks as they were being cleaned (with the exhaust vented through a drum of activated carbon). Surveying this area with a hand held PID meter also produced temporary readings of 0.1 to 0.2 ppmV, though they were not sustained.



To provide more definitive information in this regard, a 1 liter air sample was obtained from this location shortly after 1 PM, for analysis on the GC/MS. This sample, number 004 in Table 1, contained low levels of a number of VOCs, including site-related contaminants Methylene Chloride, 1,1,1-Trichloroethane, Trichloroethylene, and Tetrachloroethylene. *Importantly, all concentrations were below the established risk-based Action Levels.*

Other than a single low-level detection (0.1 ppmV) at 1:30 PM, AreaRAE DEP-2 (located on southwest fence line) reported "0.0" ppmV of VOCs throughout the day. AreaRAE DEP-4, located on the easterly corner of the site (toward the Wilson School) reported "0.0" ppmV of VOCs for the entire day.

Fence line GC/MS data in Table 1 included samples 001, 004, and 009. Only low levels of VOCs were detected, all below established Action Levels.

Higher levels of site-related contaminants were detected in the tank farm area, including in two samples (005 and 008) taken directly inside of tanks that previously contained chlorinated solvents. Even these concentrations were relatively low, topping out at 28.6 ppbV of Tetrachloroethylene inside of Tank 12, along with an estimated concentration of 300 ppbV of Cylclohexane.

Table 1 – Volatile Organic Compounds Detected in Air by GC/MS, ppbV[1]									
Analyte[2]	001	002	004	005	006	007	008	009	RL[3]
	11:30 AM	12:05 PM	1:20 PM	2:00 PM	2:45 PM	3:40 PM	3:50 PM	4:35 PM	
	SE Side of Facility	*Top of Tank 11*	*Near AreaRAE 3*	*Inside of Tank 12*	*80 SE of Tank Farm*	*Top of Tank 2*	*Inside of Tank 1*	*Near AreaRAE 4*	
Vinyl Chloride	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	5
Chloroethane[4]	**9.6**	N.D.	N.D.	N.D.	N.D.	*2.2*	N.D.	N.D.	5
Trichloromonofluoromethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	30
1,1-Dichloroethene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1
Methylene Chloride	N.D.	N.D.	**1.0**	*0.5*	*0.5*	N.D.	*0.8*	N.D.	1
1,1,2-Trichlorotrifluoroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1
Cis 1,2-Dichloroethylene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1
Chloroform	N.D.	*0.5*	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1
1,2-Dichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	5
1,1,1-Trichloroethane	N.D.	N.D.	*0.9*	*0.7*	N.D.	N.D.	*0.2*	N.D.	1
Benzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1
Carbon Tetrachloride	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1
Trichloroethylene	N.D.	*0.8*	*0.5*	*0.3*	N.D.	N.D.	N.D.	N.D.	1
1,1,2-Trichloroethane	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1
Toluene	*0.3*	*0.4*	*0.4*	**3.3**	*0.4*	N.D.	*0.5*	*0.4*	1
Tetrachloroethylene	N.D.	**4.5**	**1.0**	**28.6**	*0.3*	*0.2*	**2.4**	N.D.	1
Chlorobenzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1
Ethylbenzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1
p/m-Xylene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1
Styrene	**4.4**	*0.3*	*0.2*	N.D.	*0.5*	N.D.	*0.4*	*0.6*	1
o-Xylene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1
1,2-Dichlorobenzene (ortho)	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	5
1,2,4-Trichlorobenzene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	5
HexachloroButadiene	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	5
Cyclohexane[5]				**300**					NA
Hexane[5]					**5**				NA
2-Methylheptane[5]					**10**				NA

Table 1 - Footnotes
[1]N.D. = Not Detected; italicized values are estimated concentrations less than the Reporting Limit
[2]Purple Shaded rows are chemicals that were reportedly formerly stored at the facility
[3]RL = Analytical Reporting Limit (i.e., the minimum concentration that a contaminant can be reliably *quantified* – lower levels can be *detected*, but their concentrations can only be estimated)
[4]Chloroethane is often found in air sampling bags analyzed by the HAPSITE GC/MS, and is thought to be a sampling bag or system contaminant, and therefore not present or present at lower levels
[5]Orange shaded rows are chemicals that are not method analytes, but are tentatively identified by their mass spectra, and roughly quantified based upon the response of an internal standard
[6] NA = Not Applicable

The low levels of contaminants in the tank farm area during periods of invasive cleaning activities - and indeed inside the tanks themselves - provide an additional line of evidence that the low levels of VOCs identified at the facility fence line were representative of site conditions, even during a day of constantly shifting winds.

Summary and Conclusions

A multi-tiered air monitoring program was conducted by MassDEP personnel over the course of invasive cleaning activities at the site, during a time period when 10 of the 14 tanks in the tank farm were decontaminated.

Although screening instrumentation initially reported elevated readings in the northerly portion of the facility, it is unclear if such readings were related to the operation of vehicles and equipment in this area. Confirmatory data from a more definitive test method documented that all site-related contaminants were below establish Action Levels.

Except as noted in the northerly area, screening and chemical-specific data from fence line areas of the site were below established Action Levels, a finding that was consistent with the relatively low levels of contaminants found within the tank farm work area.

MassDEP Field Assessment and Support Team (FAST)			AIR SCREENING DATA				RTN:
City or Town:	**Framingham**	Address:	**138 Leland St**				Location:
Date Sampled:	**7/30/12**	Time:	**11:30 AM**	Field ID:	**SE**	Collector:	**Fitzgerald**	**SE edge of site**
Date Analyzed:	**7/30/12**	Time:	**11:34 AM**	Lab ID:	**001**	Analyst:	**Fitzgerald**	

Method Analytes	Concentration		Reporting Limit		Peak Fit	Peak Purity	Synonym
	ppbV	**µg/m^3**	ppbV	µg/m^3			
Vinyl Chloride	N.D.	N.D.	5	13	0.886	0.012	Chloroethene
Bromomethane	N.D.	N.D.	5	22	0	0	Methyl Bromide
Chloroethane	**9.6**	**25.3**	5	23	0.906	0.116	Ethyl Chloride
Trichloromonofluoromethane	N.D.	N.D.	30	210	0.869	0.046	Freon 11
1,1-Dichloroethene	N.D.	N.D.	1	4	0.794	0.019	Vinylidene Chloride
Methylene Chloride	N.D.	N.D.	1	3.5	0.759	0.018	Dichloromethane
1,1,2-Trichlorotrifluoroethane	N.D.	N.D.	1	7.7	0.973	0.056	Freon 113
1,1-Dichloroethane	N.D.	N.D.	1	4.1	0	0	
Cis 1,2-Dichloroethylene	N.D.	N.D.	1	4	0	0	cis-1,2-Dichloroethene
Chloroform	N.D.	N.D.	1	4.9	0.881	0.022	Trichloromethane
1,2-Dichloroethane	N.D.	N.D.	5	20	0.791	0.004	Ethylene Dichloride
1,1,1-Trichloroethane	N.D.	N.D.	1	5.5	0	0	Methyl Chloroform
Benzene	N.D.	N.D.	1	3.2	0	0	
Carbon Tetrachloride	N.D.	N.D.	1	6.3	0.864	0.078	Tetrachloromethane
1,2-Dichloropropane	N.D.	N.D.	1	4.6	0	0	Propylene Dichloride
Trichloroethylene	N.D.	N.D.	1	5.4	0	0	Trichloroethene
cis-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
trans-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
1,1,2-Trichloroethane	N.D.	N.D.	1	5.5	0.844	0.071	
Toluene	*0.3*	*1.3*	1	3.8	0.998	0.444	
1,2-Dibromoethane	N.D.	N.D.	1	7.7	0	0	Ethylene Dibromide
Tetrachloroethylene	N.D.	N.D.	1	6.8	0	0	Perchloroethylene
Chlorobenzene	N.D.	N.D.	1	4.6	0	0	
Ethylbenzene	N.D.	N.D.	1	4.3	0.998	0.241	
p/m-Xylene (see note)	N.D.	N.D.	1	4.3	0.854	0.191	
Styrene	**4.4**	**18.9**	1	4.3	0.999	0.611	Vinyl benzene
o-Xylene	N.D.	N.D.	1	4.3	0.875	0.209	
1,1,2,2-Tetrachloroethane	N.D.	N.D.	5	34	0.591	0.011	
1,3,5-Trimethylbenzene	N.D.	N.D.	5	25	0.978	0.359	Mesitylene
1,2,4-Trimethylbenzene	N.D.	N.D.	5	25	0.999	0.386	
1,3-Dichlorobenzene (meta)	N.D.	N.D.	5	30	0	0	m– Dichlorobenzene
1,2-Dichlorobenzene (ortho)	N.D.	N.D.	5	30	0	0	o – Dichlorobenzene
1,4-Dichlorobenzene (para)	N.D.	N.D.	5	30	0	0	p – Dichlorobenzene
1,2,4-Trichlorobenzene	N.D.	N.D.	5	37	0	0	
HexachloroButadiene	N.D.	N.D.	5	53	0	0	

[1]Concentration for combined p- & m- Xylenes could be up to twice the listed value, due to co-elution conditions.

Instrument: HAPSITE Smart Plus GC/MS | Quality Control: 3-6 point cal w/ %RSD<30, Internal Stds, daily blank, daily cal check

N.D. = Not Detected Italicized = estimated "J" value (concentration is less than Reporting Limit). | Last Calibration: 3/31/11

Peak Fit=agreement w/ spectral database; Peak Purity=interference from coeluting compounds. Fit >0.5 likely, >0.85 very likely match

COMMENTS: Chloroethane likely a system contaminant

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA				RTN:	
City or Town:	**Framingham**		Address:	**138 Leland St**					Location:
Date Sampled:	**7/30/12**	Time:	**12:05 PM**	Field ID:	**Tnk 11**	Collector:	**Immerman**		**Top of Tank #11**
Date Analyzed:	**7/30/12**	Time:	**12:17 PM**	Lab ID:	**002**	Analyst:	**Fitzgerald**		

Method Analytes	Concentration		Reporting Limit		Peak Fit	Peak Purity	Synonym
	ppbV	**µg/m^3**	ppbV	µg/m^3			
Vinyl Chloride	N.D.	N.D.	5	13	0	0	Chloroethene
Bromomethane	N.D.	N.D.	5	22	0	0	Methyl Bromide
Chloroethane	N.D.	N.D.	5	23	0.807	0.013	Ethyl Chloride
Trichloromonofluoromethane	N.D.	N.D.	30	210	0.965	0.079	Freon 11
1,1-Dichloroethene	N.D.	N.D.	1	4	0.674	0.022	Vinylidene Chloride
Methylene Chloride	N.D.	N.D.	1	3.5	0	0	Dichloromethane
1,1,2-Trichlorotrifluoroethane	N.D.	N.D.	1	7.7	0.722	0.052	Freon 113
1,1-Dichloroethane	N.D.	N.D.	1	4.1	0.728	0.044	
Cis 1,2-Dichloroethylene	N.D.	N.D.	1	4	0	0	cis-1,2-Dichloroethene
Chloroform	*0.5*	*2.2*	1	4.9	0.99	0.371	Trichloromethane
1,2-Dichloroethane	N.D.	N.D.	5	20	0.983	0.005	Ethylene Dichloride
1,1,1-Trichloroethane	N.D.	N.D.	1	5.5	0	0	Methyl Chloroform
Benzene	N.D.	N.D.	1	3.2	0.883	0.072	
Carbon Tetrachloride	N.D.	N.D.	1	6.3	0.864	0.067	Tetrachloromethane
1,2-Dichloropropane	N.D.	N.D.	1	4.6	0.31	0.024	Propylene Dichloride
Trichloroethylene	*0.8*	*4.5*	1	5.4	0.989	0.655	Trichloroethene
cis-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
trans-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
1,1,2-Trichloroethane	N.D.	N.D.	1	5.5	0	0	
Toluene	*0.4*	*1.5*	1	3.8	1	0.534	
1,2-Dibromoethane	N.D.	N.D.	1	7.7	0	0	Ethylene Dibromide
Tetrachloroethylene	**4.5**	**30.3**	1	6.8	0.98	0.936	Perchloroethylene
Chlorobenzene	N.D.	N.D.	1	4.6	0.753	0.023	
Ethylbenzene	N.D.	N.D.	1	4.3	0.935	0.1	
p/m-Xylene (see note)	N.D.	N.D.	1	4.3	0.992	0.263	
Styrene	*0.3*	*1.3*	1	4.3	0.999	0.383	Vinyl benzene
o-Xylene	N.D.	N.D.	1	4.3	0.997	0.264	
1,1,2,2-Tetrachloroethane	N.D.	N.D.	5	34	0.744	0.039	
1,3,5-Trimethylbenzene	N.D.	N.D.	5	25	0.925	0.111	Mesitylene
1,2,4-Trimethylbenzene	N.D.	N.D.	5	25	0.931	0.112	
1,3-Dichlorobenzene (meta)	N.D.	N.D.	5	30	0.657	0.021	m– Dichlorobenzene
1,2-Dichlorobenzene (ortho)	N.D.	N.D.	5	30	0.667	0.017	o – Dichlorobenzene
1,4-Dichlorobenzene (para)	N.D.	N.D.	5	30	0.651	0.021	p – Dichlorobenzene
1,2,4-Trichlorobenzene	N.D.	N.D.	5	37	0	0	
HexachloroButadiene	N.D.	N.D.	5	53	0	0	

[1]Concentration for combined p- & m- Xylenes could be up to twice the listed value, due to co-elution conditions.

Instrument: HAPSITE Smart Plus GC/MS | Quality Control: 3-6 point cal w/ %RSD<30, Int Stds, daily blank, daily cal check

N.D. = Not Detected Italicized = estimated "J" value (concentration is less than Reporting Limit). | Last Calibration: 3/31/11

Peak Fit=agreement w/ spectral database; Peak Purity=interference from coeluting compounds. Fit >0.5 likely, >0.85 very likely match

COMMENTS:

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City or Town:	**Framingham**		Address:	**138 Leland St**					Location:
Date Sampled:	**7/30/12**	Time:	**1:20 PM**	Field ID:	**AR3**	Collector:	**Immerman**		**Near Area RAE #3**
Date Analyzed:	**7/30/12**	Time:	**1:36 PM**	Lab ID:	**004**	Analyst:	**Fitzgerald**		

Method Analytes	Concentration		Reporting Limit		Peak Fit	Peak Purity	Synonym
	ppbV	µg/m^3	ppbV	µg/m^3			
Vinyl Chloride	N.D.	N.D.	5	13	0.999	0.003	Chloroethene
Bromomethane	N.D.	N.D.	5	22	0	0	Methyl Bromide
Chloroethane	N.D.	N.D.	5	23	0.749	0.005	Ethyl Chloride
Trichloromonofluoromethane	N.D.	N.D.	30	210	0.632	0.028	Freon 11
1,1-Dichloroethene	N.D.	N.D.	1	4	0	0	Vinylidene Chloride
Methylene Chloride	**1.0**	**3.6**	1	3.5	0.858	0.406	Dichloromethane
1,1,2-Trichlorotrifluoroethane	N.D.	N.D.	1	7.7	0.55	0.051	Freon 113
1,1-Dichloroethane	N.D.	N.D.	1	4.1	0	0	
Cis 1,2-Dichloroethylene	N.D.	N.D.	1	4	0	0	cis-1,2-Dichloroethene
Chloroform	N.D.	N.D.	1	4.9	0	0	Trichloromethane
1,2-Dichloroethane	N.D.	N.D.	5	20	0	0	Ethylene Dichloride
1,1,1-Trichloroethane	*0.9*	*4.9*	1	5.5	0.985	0.498	Methyl Chloroform
Benzene	N.D.	N.D.	1	3.2	0.881	0.121	
Carbon Tetrachloride	N.D.	N.D.	1	6.3	0.936	0.082	Tetrachloromethane
1,2-Dichloropropane	N.D.	N.D.	1	4.6	0	0	Propylene Dichloride
Trichloroethylene	*0.5*	*2.9*	1	5.4	0.99	0.602	Trichloroethene
cis-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
trans-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
1,1,2-Trichloroethane	N.D.	N.D.	1	5.5	0	0	
Toluene	*0.4*	*1.6*	1	3.8	0.999	0.536	
1,2-Dibromoethane	N.D.	N.D.	1	7.7	0	0	Ethylene Dibromide
Tetrachloroethylene	**1.0**	**6.9**	1	6.8	0.967	0.84	Perchloroethylene
Chlorobenzene	N.D.	N.D.	1	4.6	0.711	0	
Ethylbenzene	N.D.	N.D.	1	4.3	0.963	0.149	
p/m-Xylene (see note)	N.D.	N.D.	1	4.3	0.992	0.317	
Styrene	*0.2*	*1.0*	1	4.3	0.999	0.416	Vinyl benzene
o-Xylene	N.D.	N.D.	1	4.3	0.998	0.184	
1,1,2,2-Tetrachloroethane	N.D.	N.D.	5	34	0.91	0.045	
1,3,5-Trimethylbenzene	N.D.	N.D.	5	25	0.996	0.198	Mesitylene
1,2,4-Trimethylbenzene	N.D.	N.D.	5	25	0.998	0.198	
1,3-Dichlorobenzene (meta)	N.D.	N.D.	5	30	0.91	0.044	m– Dichlorobenzene
1,2-Dichlorobenzene (ortho)	N.D.	N.D.	5	30	0.913	0.039	o – Dichlorobenzene
1,4-Dichlorobenzene (para)	N.D.	N.D.	5	30	0.913	0.044	p – Dichlorobenzene
1,2,4-Trichlorobenzene	N.D.	N.D.	5	37	0	0	
HexachloroButadiene	N.D.	N.D.	5	53	0	0	

[1]Concentration for combined p- & m- Xylenes could be up to twice the listed value, due to co-elution conditions.

Instrument: HAPSITE Smart Plus GC/MS	Quality Control: 3-6 point cal w/ %RSD<30, Internal Stds, daily blank, daily cal check
N.D. = Not Detected Italicized = estimated "J" value (concentration is less than Reporting Limit).	Last Calibration: 3/31/11

Peak Fit=agreement w/ spectral database; Peak Purity=interference from coeluting compounds. Fit >0.5 likely, >0.85 very likely match

COMMENTS:

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA				RTN:	
City or Town:	**Framingham**		Address:	**138 Leland St**					Location:
Date Sampled:	**7/30/12**	Time:	**2:00 PM**	Field ID:	**tnk 12**	Collector:	**Immerman**		**Inside Tank #12**
Date Analyzed:	**7/30/12**	Time:	**2:15 PM**	Lab ID:	**005**	Analyst:	**Fitzgerald**		

Method Analytes	Concentration		Reporting Limit		Peak Fit	Peak Purity	Synonym
	ppbV	**µg/m³**	ppbV	µg/m³			
Vinyl Chloride	N.D.	N.D.	5	13	0	0	Chloroethene
Bromomethane	N.D.	N.D.	5	22	0.966	0.035	Methyl Bromide
Chloroethane	N.D.	N.D.	5	23	0.973	0.048	Ethyl Chloride
Trichloromonofluoromethane	N.D.	N.D.	30	210	0.854	0.011	Freon 11
1,1-Dichloroethene	N.D.	N.D.	1	4	0	0	Vinylidene Chloride
Methylene Chloride	*0.5*	*1.6*	1	3.5	0.961	0.265	Dichloromethane
1,1,2-Trichlorotrifluoroethane	N.D.	N.D.	1	7.7	0.994	0.037	Freon 113
1,1-Dichloroethane	N.D.	N.D.	1	4.1	0.701	0.006	
Cis 1,2-Dichloroethylene	N.D.	N.D.	1	4	0	0	cis-1,2-Dichloroethene
Chloroform	N.D.	N.D.	1	4.9	0.54	0.018	Trichloromethane
1,2-Dichloroethane	N.D.	N.D.	5	20	0.943	0.006	Ethylene Dichloride
1,1,1-Trichloroethane	*0.7*	*4.1*	1	5.5	0.98	0.428	Methyl Chloroform
Benzene	N.D.	N.D.	1	3.2	0.741	0.024	
Carbon Tetrachloride	N.D.	N.D.	1	6.3	0.964	0.064	Tetrachloromethane
1,2-Dichloropropane	N.D.	N.D.	1	4.6	0.266	0.016	Propylene Dichloride
Trichloroethylene	*0.3*	*1.6*	1	5.4	0.983	0.468	Trichloroethene
cis-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
trans-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
1,1,2-Trichloroethane	N.D.	N.D.	1	5.5	0	0	
Toluene	**3.3**	**12.5**	1	3.8	0.996	0.681	
1,2-Dibromoethane	N.D.	N.D.	1	7.7	0	0	Ethylene Dibromide
Tetrachloroethylene	**28.6**	**193.7**	1	6.8	0.985	0.972	Perchloroethylene
Chlorobenzene	N.D.	N.D.	1	4.6	0	0	
Ethylbenzene	N.D.	N.D.	1	4.3	0.999	0.167	
p/m-Xylene (see note)	N.D.	N.D.	1	4.3	1	0.287	
Styrene	N.D.	N.D.	1	4.3	0.992	0.316	Vinyl benzene
o-Xylene	N.D.	N.D.	1	4.3	0.999	0.287	
1,1,2,2-Tetrachloroethane	N.D.	N.D.	5	34	0.965	0.029	
1,3,5-Trimethylbenzene	N.D.	N.D.	5	25	0.92	0.197	Mesitylene
1,2,4-Trimethylbenzene	N.D.	N.D.	5	25	0.993	0.201	
1,3-Dichlorobenzene (meta)	N.D.	N.D.	5	30	0	0	m– Dichlorobenzene
1,2-Dichlorobenzene (ortho)	N.D.	N.D.	5	30	0	0	o – Dichlorobenzene
1,4-Dichlorobenzene (para)	N.D.	N.D.	5	30	0	0	p – Dichlorobenzene
1,2,4-Trichlorobenzene	N.D.	N.D.	5	37	0	0	
HexachloroButadiene	N.D.	N.D.	5	53	0	0	

[1]Concentration for combined p- & m- Xylenes could be up to twice the listed value, due to co-elution conditions.

Instrument: HAPSITE Smart Plus GC/MS	Quality Control: 3-6 point cal w/ %RSD<30, Int Stds, daily blank, daily cal check
N.D. = Not Detected Italicized = estimated "J" value (concentration is less than Reporting Limit).	Last Calibration: 3/31/11

Peak Fit=agreement w/ spectral database; Peak Purity=interference from coeluting compounds. Fit >0.5 likely, >0.85 very likely match

COMMENTS: Cyclohexane tentatively identified via mass spectra, at approx 300 ppbV

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA				RTN:
City or Town:	**Framingham**		Address:	**138 Leland St**				Location:
Date Sampled:	**7/30/12**	Time:	**2:45 PM**	Field ID:	**SE**	Collector:	**Fitzgerald**	**80 ft SE of tank farm**
Date Analyzed:	**7/30/12**	Time:	**3:02 PM**	Lab ID:	**006**	Analyst:	**Fitzgerald**	

Method Analytes	Concentration		Reporting Limit		Peak Fit	Peak Purity	Synonym
	ppbV	**µg/m³**	ppbV	µg/m³			
Vinyl Chloride	N.D.	N.D.	5	13	0	0	Chloroethene
Bromomethane	N.D.	N.D.	5	22	0	0	Methyl Bromide
Chloroethane	N.D.	N.D.	5	23	0.943	0.052	Ethyl Chloride
Trichloromonofluoromethane	N.D.	N.D.	30	210	0.98	0.12	Freon 11
1,1-Dichloroethene	N.D.	N.D.	1	4	0	0	Vinylidene Chloride
Methylene Chloride	*0.5*	*1.8*	1	3.5	0.898	0.316	Dichloromethane
1,1,2-Trichlorotrifluoroethane	N.D.	N.D.	1	7.7	0.702	0.079	Freon 113
1,1-Dichloroethane	N.D.	N.D.	1	4.1	0.853	0.004	
Cis 1,2-Dichloroethylene	N.D.	N.D.	1	4	0	0	cis-1,2-Dichloroethene
Chloroform	N.D.	N.D.	1	4.9	1	0.005	Trichloromethane
1,2-Dichloroethane	N.D.	N.D.	5	20	0.961	0.004	Ethylene Dichloride
1,1,1-Trichloroethane	N.D.	N.D.	1	5.5	0	0	Methyl Chloroform
Benzene	N.D.	N.D.	1	3.2	0.907	0.075	
Carbon Tetrachloride	N.D.	N.D.	1	6.3	0.854	0.105	Tetrachloromethane
1,2-Dichloropropane	N.D.	N.D.	1	4.6	0	0	Propylene Dichloride
Trichloroethylene	N.D.	N.D.	1	5.4	0.979	0.257	Trichloroethene
cis-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
trans-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
1,1,2-Trichloroethane	N.D.	N.D.	1	5.5	0	0	
Toluene	*0.2*	*0.9*	1	3.8	0.996	0.452	
1,2-Dibromoethane	N.D.	N.D.	1	7.7	0	0	Ethylene Dibromide
Tetrachloroethylene	*0.3*	*1.9*	1	6.8	0.953	0.649	Perchloroethylene
Chlorobenzene	N.D.	N.D.	1	4.6	0	0	
Ethylbenzene	N.D.	N.D.	1	4.3	0.988	0.18	
p/m-Xylene (see note)	N.D.	N.D.	1	4.3	0.982	0.169	
Styrene	*0.5*	*2.3*	1	4.3	1	0.547	Vinyl benzene
o-Xylene	N.D.	N.D.	1	4.3	0.969	0.144	
1,1,2,2-Tetrachloroethane	N.D.	N.D.	5	34	0.58	0.075	
1,3,5-Trimethylbenzene	N.D.	N.D.	5	25	0.997	0.203	Mesitylene
1,2,4-Trimethylbenzene	N.D.	N.D.	5	25	0.998	0.203	
1,3-Dichlorobenzene (meta)	N.D.	N.D.	5	30	0	0	m– Dichlorobenzene
1,2-Dichlorobenzene (ortho)	N.D.	N.D.	5	30	0	0	o – Dichlorobenzene
1,4-Dichlorobenzene (para)	N.D.	N.D.	5	30	0	0	p – Dichlorobenzene
1,2,4-Trichlorobenzene	N.D.	N.D.	5	37	0	0	
HexachloroButadiene	N.D.	N.D.	5	53	0	0	

[1]Concentration for combined p- & m- Xylenes could be up to twice the listed value, due to co-elution conditions.

Instrument: HAPSITE Smart Plus GC/MS | Quality Control: 3-6 point cal w/ %RSD<30, Internal Stds, daily blank, daily cal check

N.D. = Not Detected Italicized = estimated "J" value (concentration is less than Reporting Limit). | Last Calibration: 3/31/11

Peak Fit=agreement w/ spectral database; Peak Purity=interference from coeluting compounds. Fit >0.5 likely, >0.85 very likely match

COMMENTS: Tentatively Identified Compounds: Hexane @ 5 ppbV; 2-Methylheptane @ 10 ppbV

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA				RTN:	
City or Town:	**Framingham**		Address:	**138 Leland St**					Location:
Date Sampled:	**7/30/12**	Time:	**3:40 PM**	Field ID:	**tnk frm**	Collector:	**Immerman**		**Top Tank Farm**
Date Analyzed:	**7/30/12**	Time:	**3:49 PM**	Lab ID:	**007**	Analyst:	**Fitzgerald**		

Method Analytes	Concentration		Reporting Limit		Peak Fit	Peak Purity	Synonym
	ppbV	µg/m^3	ppbV	µg/m^3			
Vinyl Chloride	N.D.	N.D.	5	13	0	0	Chloroethene
Bromomethane	N.D.	N.D.	5	22	0.904	0.019	Methyl Bromide
Chloroethane	*2.2*	*5.9*	5	23	0.947	0.106	Ethyl Chloride
Trichloromonofluoromethane	N.D.	N.D.	30	210	0.942	0.044	Freon 11
1,1-Dichloroethene	N.D.	N.D.	1	4	0.838	0.039	Vinylidene Chloride
Methylene Chloride	N.D.	N.D.	1	3.5	0	0	Dichloromethane
1,1,2-Trichlorotrifluoroethane	N.D.	N.D.	1	7.7	0.779	0.041	Freon 113
1,1-Dichloroethane	N.D.	N.D.	1	4.1	0	0	
Cis 1,2-Dichloroethylene	N.D.	N.D.	1	4	0	0	cis-1,2-Dichloroethene
Chloroform	N.D.	N.D.	1	4.9	0	0	Trichloromethane
1,2-Dichloroethane	N.D.	N.D.	5	20	0.951	0.012	Ethylene Dichloride
1,1,1-Trichloroethane	N.D.	N.D.	1	5.5	0	0	Methyl Chloroform
Benzene	N.D.	N.D.	1	3.2	0.953	0.135	
Carbon Tetrachloride	N.D.	N.D.	1	6.3	0.956	0.108	Tetrachloromethane
1,2-Dichloropropane	N.D.	N.D.	1	4.6	0	0	Propylene Dichloride
Trichloroethylene	N.D.	N.D.	1	5.4	0.977	0.376	Trichloroethene
cis-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
trans-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
1,1,2-Trichloroethane	N.D.	N.D.	1	5.5	0	0	
Toluene	N.D.	N.D.	1	3.8	0.99	0.335	
1,2-Dibromoethane	N.D.	N.D.	1	7.7	0	0	Ethylene Dibromide
Tetrachloroethylene	*0.2*	*1.7*	1	6.8	0.92	0.654	Perchloroethylene
Chlorobenzene	N.D.	N.D.	1	4.6	0	0	
Ethylbenzene	N.D.	N.D.	1	4.3	0.969	0.215	
p/m-Xylene (see note)	N.D.	N.D.	1	4.3	0.998	0.258	
Styrene	N.D.	N.D.	1	4.3	0.99	0.402	Vinyl benzene
o-Xylene	N.D.	N.D.	1	4.3	0.999	0.109	
1,1,2,2-Tetrachloroethane	N.D.	N.D.	5	34	0	0	
1,3,5-Trimethylbenzene	N.D.	N.D.	5	25	0.897	0.138	Mesitylene
1,2,4-Trimethylbenzene	N.D.	N.D.	5	25	0.907	0.139	
1,3-Dichlorobenzene (meta)	N.D.	N.D.	5	30	0	0	m– Dichlorobenzene
1,2-Dichlorobenzene (ortho)	N.D.	N.D.	5	30	0	0	o – Dichlorobenzene
1,4-Dichlorobenzene (para)	N.D.	N.D.	5	30	0	0	p – Dichlorobenzene
1,2,4-Trichlorobenzene	N.D.	N.D.	5	37	0	0	
HexachloroButadiene	N.D.	N.D.	5	53	0	0	

[1]Concentration for combined p- & m- Xylenes could be up to twice the listed value, due to co-elution conditions.

Instrument: HAPSITE Smart Plus GC/MS | Quality Control: 3-6 point cal w/ %RSD<30, Internal Stds, daily blank, daily cal check

N.D. = Not Detected Italicized = estimated "J" value (concentration is less than Reporting Limit). | Last Calibration: 3/31/11

Peak Fit=agreement w/ spectral database; Peak Purity=interference from coeluting compounds. Fit >0.5 likely, >0.85 very likely match

COMMENTS:

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA				RTN:
City or Town:	**Framingham**		Address:	**138 Leland St**				Location:
Date Sampled:	**7/30/12**	Time:	**3:50 PM**	Field ID:	**tnk 1**	Collector:	**Immerman**	**Tank #1 - inside**
Date Analyzed:	**7/30/12**	Time:	**4:23 PM**	Lab ID:	**008**	Analyst:	**Fitzgerald**	

Method Analytes	Concentration		Reporting Limit		Peak Fit	Peak Purity	Synonym
	ppbV	**µg/m³**	ppbV	µg/m³			
Vinyl Chloride	N.D.	N.D.	5	13	0	0	Chloroethene
Bromomethane	N.D.	N.D.	5	22	0.726	0.008	Methyl Bromide
Chloroethane	N.D.	N.D.	5	23	0.969	0.071	Ethyl Chloride
Trichloromonofluoromethane	N.D.	N.D.	30	210	0.943	0.013	Freon 11
1,1-Dichloroethene	N.D.	N.D.	1	4	0	0	Vinylidene Chloride
Methylene Chloride	*0.8*	*2.7*	1	3.5	0.896	0.313	Dichloromethane
1,1,2-Trichlorotrifluoroethane	N.D.	N.D.	1	7.7	0.634	0.05	Freon 113
1,1-Dichloroethane	N.D.	N.D.	1	4.1	0.873	0.041	
Cis 1,2-Dichloroethylene	N.D.	N.D.	1	4	0.675	0.032	cis-1,2-Dichloroethene
Chloroform	N.D.	N.D.	1	4.9	0.914	0.086	Trichloromethane
1,2-Dichloroethane	N.D.	N.D.	5	20	0.89	0.004	Ethylene Dichloride
1,1,1-Trichloroethane	*0.2*	*1.3*	1	5.5	0.975	0.235	Methyl Chloroform
Benzene	N.D.	N.D.	1	3.2	0.927	0.105	
Carbon Tetrachloride	N.D.	N.D.	1	6.3	0.97	0.069	Tetrachloromethane
1,2-Dichloropropane	N.D.	N.D.	1	4.6	0	0	Propylene Dichloride
Trichloroethylene	N.D.	N.D.	1	5.4	0.965	0.337	Trichloroethene
cis-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
trans-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
1,1,2-Trichloroethane	N.D.	N.D.	1	5.5	0	0	
Toluene	*0.5*	*2.0*	1	3.8	0.993	0.573	
1,2-Dibromoethane	N.D.	N.D.	1	7.7	0	0	Ethylene Dibromide
Tetrachloroethylene	**2.4**	**16.1**	1	6.8	0.981	0.928	Perchloroethylene
Chlorobenzene	N.D.	N.D.	1	4.6	0	0	
Ethylbenzene	N.D.	N.D.	1	4.3	0.946	0.207	
p/m-Xylene (see note)	N.D.	N.D.	1	4.3	1	0.431	
Styrene	*0.4*	*1.9*	1	4.3	0.998	0.483	Vinyl benzene
o-Xylene	N.D.	N.D.	1	4.3	0.98	0.239	
1,1,2,2-Tetrachloroethane	N.D.	N.D.	5	34	0.708	0.006	
1,3,5-Trimethylbenzene	N.D.	N.D.	5	25	0.962	0.109	Mesitylene
1,2,4-Trimethylbenzene	N.D.	N.D.	5	25	0.999	0.222	
1,3-Dichlorobenzene (meta)	N.D.	N.D.	5	30	0.631	0.024	m– Dichlorobenzene
1,2-Dichlorobenzene (ortho)	N.D.	N.D.	5	30	0.612	0.022	o – Dichlorobenzene
1,4-Dichlorobenzene (para)	N.D.	N.D.	5	30	0.617	0.024	p – Dichlorobenzene
1,2,4-Trichlorobenzene	N.D.	N.D.	5	37	0	0	
HexachloroButadiene	N.D.	N.D.	5	53	0	0	

[1]Concentration for combined p- & m- Xylenes could be up to twice the listed value, due to co-elution conditions.

Instrument: HAPSITE Smart Plus GC/MS | Quality Control: 3-6 point cal w/ %RSD<30, Int Stds, daily blank, daily cal check

N.D. = Not Detected Italicized = estimated "J" value (concentration is less than Reporting Limit). | Last Calibration: 3/31/11

Peak Fit=agreement w/ spectral database; Peak Purity=interference from coeluting compounds. Fit >0.5 likely, >0.85 very likely match

COMMENTS:

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA				RTN:
City or Town:	**Framingham**		Address:	**133 Leland St**				Location:
Date Sampled:	**7/30/12**	Time:	**4:35 PM**	Field ID:	**AR 4**	Collector:	**Fitzgerald**	**Near AreaRAE # 4 (SE crnr)**
Date Analyzed:	**7/30/12**	Time:	**4:59 PM**	Lab ID:	**009**	Analyst:	**Fitzgerald**	

Method Analytes	Concentration		Reporting Limit		Peak Fit	Peak Purity	Synonym
	ppbV	**µg/m³**	ppbV	µg/m³			
Vinyl Chloride	N.D.	N.D.	5	13	0	0	Chloroethene
Bromomethane	N.D.	N.D.	5	22	0.92	0.023	Methyl Bromide
Chloroethane	N.D.	N.D.	5	23	0.992	0.003	Ethyl Chloride
Trichloromonofluoromethane	N.D.	N.D.	30	210	0.726	0.043	Freon 11
1,1-Dichloroethene	N.D.	N.D.	1	4	0	0	Vinylidene Chloride
Methylene Chloride	N.D.	N.D.	1	3.5	0	0	Dichloromethane
1,1,2-Trichlorotrifluoroethane	N.D.	N.D.	1	7.7	0.618	0.065	Freon 113
1,1-Dichloroethane	N.D.	N.D.	1	4.1	0	0	
Cis 1,2-Dichloroethylene	N.D.	N.D.	1	4	0.854	0.041	cis-1,2-Dichloroethene
Chloroform	N.D.	N.D.	1	4.9	0.833	0.053	Trichloromethane
1,2-Dichloroethane	N.D.	N.D.	5	20	0	0	Ethylene Dichloride
1,1,1-Trichloroethane	N.D.	N.D.	1	5.5	0	0	Methyl Chloroform
Benzene	N.D.	N.D.	1	3.2	0	0	
Carbon Tetrachloride	N.D.	N.D.	1	6.3	0	0	Tetrachloromethane
1,2-Dichloropropane	N.D.	N.D.	1	4.6	0	0	Propylene Dichloride
Trichloroethylene	N.D.	N.D.	1	5.4	0	0	Trichloroethene
cis-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
trans-1,3-Dichloropropene	N.D.	N.D.	1	4.5	0	0	
1,1,2-Trichloroethane	N.D.	N.D.	1	5.5	0	0	
Toluene	*0.4*	*1.5*	1	3.8	0.996	0.535	
1,2-Dibromoethane	N.D.	N.D.	1	7.7	0	0	Ethylene Dibromide
Tetrachloroethylene	N.D.	N.D.	1	6.8	0.862	0.462	Perchloroethylene
Chlorobenzene	N.D.	N.D.	1	4.6	0	0	
Ethylbenzene	N.D.	N.D.	1	4.3	0.975	0.12	
p/m-Xylene (see note)	N.D.	N.D.	1	4.3	0.987	0.263	
Styrene	*0.6*	*2.6*	1	4.3	0.999	0.563	Vinyl benzene
o-Xylene	N.D.	N.D.	1	4.3	0.993	0.264	
1,1,2,2-Tetrachloroethane	N.D.	N.D.	5	34	0	0	
1,3,5-Trimethylbenzene	N.D.	N.D.	5	25	0.998	0.201	Mesitylene
1,2,4-Trimethylbenzene	N.D.	N.D.	5	25	0.999	0.202	
1,3-Dichlorobenzene (meta)	N.D.	N.D.	5	30	0	0	m– Dichlorobenzene
1,2-Dichlorobenzene (ortho)	N.D.	N.D.	5	30	0	0	o – Dichlorobenzene
1,4-Dichlorobenzene (para)	N.D.	N.D.	5	30	0	0	p – Dichlorobenzene
1,2,4-Trichlorobenzene	N.D.	N.D.	5	37	0	0	
HexachloroButadiene	N.D.	N.D.	5	53	0	0	

[1]Concentration for combined p- & m- Xylenes could be up to twice the listed value, due to co-elution conditions.

Instrument: HAPSITE Smart Plus GC/MS	Quality Control: 3-6 point cal w/ %RSD<30, Internal Stds, daily blank, daily cal check
N.D. = Not Detected Italicized = estimated "J" value (concentration is less than Reporting Limit).	Last Calibration: 3/31/11

Peak Fit=agreement w/ spectral database; Peak Purity=interference from coeluting compounds. Fit >0.5 likely, >0.85 very likely match

COMMENTS: